DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
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> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 3 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 7,497,997 (hereinafter "Glezer").

Glezer teaches an assay cartridge which may comprise reagents for carrying out an assay such as binding reagents, detectable labels, etc. The reagents may be present in liquid form, solid form and/or immobilized on the surface of solid phase supports present in the cartridge. Column 37, lines 31-51. (See related provisional application on page 14-17 disclosing an assay cartridge and its components; page 9 and 29 disclosing reagents such as labeled binding partner of the analyte of interest or a labeled competitor that competes with the analyte of interest for a binding partner of the analyte of interest; page 62 disclosing that these reagents may be stored in dry or wet form in the assay chamber.)

The sample chamber may contain dry reagents used in carrying out the assay that reconstitute on addition of a liquid sample. Column 39, lines 9-36; and column 43,

lines 56-65. (See page 62 of the provisional application disclosing that the reagents may be in dry form implies that the dried reagents are reconstituted on addition of a liquid sample.)

The zone in which dried reagents are deposited may be prescribed by a boundary which confines the volume to a specific region of a substrate. The boundary surface may be raised or lowered (preferably, raised). Column 46, line 66 to column 47, line 18. The zone may for example be defined by a depression cut or molded into the substrate. The reagent can then be dispensed onto the substrate within the zone boundary. Column 47, lines 19-35. Detection chambers comprise immobilized binding reagents. Column 55, lines 34-48. (See pages 21-22 of the provisional application disclosing that the electrode surface is bounded by a dielectric surface that is raised or lowered; and see page 49 disclosing immobilization of reagents on a surface such as an electrode surface, and defined by a depression.)

Assay reagents may be immobilized. One may attach antibodies, proteins, enzymes, cells, cell receptors, etc. Column 5, lines 2-41; Column 21, line 47 to column 22, line 8. (See provisional application on page 29.)

As to Applicant's claims 3 and 12, the substrate (i.e., component of the cartridge or entire cartridge) is equivalent to a cell culture substrate having an area for culturing a cell. The detection chambers with immobilized binding reagents wherein the binding reagents may be for example cell receptors are equivalent to an area for immobilizing a biologically activity substance having a biological activity to a cell. The portion of the cartridge which includes the dried reagent is equivalent to an area for culturing a cell,

comprising an area for holding a biologically active substance having a biological activity to the cell. It is noted that the area holding dried reagent is capable of functioning as a "culturing area" and is capable of holding a biologically active substance having a biological activity to the cell, since it is capable of holding for example receptors or ligands. Moreover, it is capable of holding the biologically active substance in such a manner that it is released in a culture liquid when coming in contact with the culture liquid, since it is understood that the dried reagent is reconstituted and released in the liquid once in contact with the liquid.

(It is also noted that the disclosure of the Glezer patent relied upon in the rejection above is also disclosed in the related provisional application, 60436569, as noted above, and is thus given the priority date of December 26, 2002 of the provisional application.)

Applicants have amended the claims to recite that the culturing area is exposed on a surface of the cell culture substrate. However, the area holding dried reagent in the Glezer device (the area being equated to Applicants' "culturing area") is a surface that is exposed and it is a surface of the cell culture substrate, and thus meets this limitation. (It is noted that Applicants' amendments have not distinguished the claims from the Glezer device, with structural limitations, explicitly recited or implicitly required.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over 7,497,997 (hereinafter "Glezer"), in view of 4,378,428 (hereinafter "Farina").

The teachings of Glezer have been discussed above and are applicable to claim 6. Glezer however does not teach that the holding area includes a combination of areas different in a density of the biologically active substance in the holding area, and the immobilizing area includes a combination of areas different in density of the biologically active substance in the immobilizing area.

It is noted however that Glezer does disclose the following. The assay cartridges may comprise a plurality of flow cells or detection chambers to conduct assays for a plurality of analytes. Column 14, lines 13-31. (See provisional application on page 61.)

Furthermore, Farina provide details regarding providing a standard control. Farina teach that by utilizing increasing known analyte concentrations, it is possible to construct a standard or reference curve of catalytic activity (e.g., rate of formation of reporter molecule) or alternatively, a function of catalytic activity versus analyte concentration. The standard or reference curve may then be utilized to determine an unknown analyte concentration after measuring the rate of formation of reporter molecule at the same conditions used to construct the standard curve. Column 8, lines 31-40. Further details of the assay, exemplified in competitive format, is discussed in column 8, lines 41-63. It is further discussed that, in the exemplary assay, the concentrations of the antibody, the polypeptide partner and the labeled analyte should

be selected in a particular assay so that varying amounts of analyte will be reflected in the conversion of the substrate to the reporter molecule. Column 9, lines 60-66.

It would have been within the skills of the ordinary artisan to use the Glezer device to provide assays using increasing known analyte concentrations, and thus increasing amounts of binding partner (e.g., bound in the detection chamber as disclosed by Glezer), and other necessary reagents to construct a standard curve to determine unknown analyte concentration as disclosed by Farina. It is within the skills of the ordinary artisan to provide the different concentrations of reagents in the detection zones with boundaries, in a liquid form for drying, as taught by Glezer. Such different concentration of reagents in the zones of same area provides different densities of the reagents. Likewise, different concentrations of the immobilized biomolecules or reagents in the detection chamber provides different densities of the biomolecules or reagents. Moreover, the skilled artisan would have had reasonable expectation of success since Glezer disclose that multiple different assays may be performed on the device.

Response to Arguments

Applicants have amended the claims to recite that the culturing area is exposed on a surface of the cell culture substrate. However, the area holding dried reagent in the Glezer device (the area being equated to Applicants' "culturing area") is a surface that is exposed and it is a surface of the cell culture substrate, and thus meets this limitation.

(It is noted that Applicants' amendments have not distinguished the claims from the Glezer device, with structural limitations, explicitly recited or implicitly required.)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Malmqvist 6,200,814, discloses a gradient of amount of ligands may be provided (col. 14, lines 26-37.)

Ivarrson, 6,493,097, discloses simultaneous monitoring (column 7, line 60 – column 18, line 7) and presenting surface concentration changes (column 23, lines 53-64.)

Tashiro, 7,541,195, discloses a substrate for a microarray, the substrate having protruding spots for immobilizing biomolecules on the top surface of the protruding spots.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANN Y. LAM whose telephone number is (571)272-0822. The examiner can normally be reached on Mon.-Thurs. 9-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ann Y. Lam/
Primary Examiner, Art Unit 1641